

1 WHAT IS CLAIMED IS:

2 1. A catalyst composition comprising silver and an
3 alkali metal promoter deposited on a carrier,
4 which alkali metal promoter comprises potassium
5 in a quantity of at least 5 μ mole/g, relative to
6 the weight of the catalyst composition; and, an
7 alkali metal selected from the group consisting
8 of lithium, sodium and mixtures thereof in a
9 quantity of at least 1 μ mole/g, relative to the
10 weight of the catalyst composition.

1 2. The catalyst composition of claim 1, wherein the
2 potassium promoter is present at a concentration
3 of at least 10 μ mole/g, relative to the weight
4 of the catalyst composition.

1 3. The catalyst composition of claim 1, wherein
2 lithium is present at a concentration of at
3 least 5 μ mole/g, relative to the weight of the
4 catalyst composition.

1 4. The catalyst composition of claim 1, wherein
2 sodium is present at a concentration of at least
3 5 μ mole/g, relative to the weight of the
4 catalyst composition.

1 5. The catalyst composition of claim 1, wherein
2 lithium and sodium are each present at a

3 concentration of at least 10 μ mole/g, relative
4 to the weight of the catalyst composition.

1 6. The catalyst composition of claim 1, wherein the
2 carrier comprises an α -alumina having a BET
3 surface area of 0.1 m^2/g to 25 m^2/g , and an
4 apparent porosity of from 0.1 ml/g to 1.2 ml/g,
5 measured by water absorption.

1 7. The catalyst composition of claim 1, wherein the
2 carrier comprises a silver bonded calcium
3 carbonate having a crush strength of at least 22
4 N.

1 8. The catalyst composition of claim 1, wherein the
2 carrier comprises a silver bonded calcium
3 carbonate wherein the weight ratio of silver to
4 calcium carbonate is from 1:5 to 1:100.

1 9. The catalyst composition of claim 1, wherein the
2 carrier comprises a silver bonded calcium
3 carbonate having a specific surface area of from
4 1 m^2/g to 20 m^2/g .

1 10. The catalyst composition of claim 1, wherein the
2 carrier comprises a silver bonded calcium
3 carbonate having a specific surface area of from
4 3 m^2/g to 15 m^2/g .

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2 11. The catalyst composition of claim 1, wherein the
3 carrier comprises a silver bonded calcium
4 carbonate having an apparent porosity of from
5 0.05 ml/g to 2 ml/g.

1 12. The catalyst composition of claim 1, wherein the
2 carrier comprises a silver bonded calcium
3 carbonate having an apparent porosity of from
4 0.1 ml/g to 1.5 ml/g.

1 13. The catalyst composition of claim 1, wherein
2 the carrier comprises at least 95 %w α -alumina.

1 14. A process for preparing an olefin oxide which
2 process comprises:

3 reacting an olefin having at least 3 carbon
4 atoms with oxygen in the presence of a
5 catalyst composition comprising silver and
6 an alkali metal promoter deposited on a
7 carrier, which alkali metal promoter
8 comprises potassium in a quantity of at
9 least 5 μ mole/g, relative to the weight of
10 the catalyst composition, and an alkali
11 metal selected from the group consisting of
12 lithium, sodium and mixtures thereof in a
13 quantity of at least 1 μ mole/g, relative to
14 the weight of the catalyst composition.

1 15. The process of claim 14 which is further
2 conducted in the presence of a nitrate or nitrite
3 forming compound.

1 16. The process of claim 14, wherein the potassium
2 promoter is present at a concentration of at
3 least 10 $\mu\text{mole/g}$.

1 17. The process of claim 14, wherein lithium is
2 present at a concentration of at least 5 $\mu\text{mole/g}$.

1 18. The process of claim 14, wherein sodium is
2 present at a concentration of at least 5 $\mu\text{mole/g}$.

1 19. The process of claim 14, wherein lithium and
2 sodium are each present at a concentration of at
3 least 10 $\mu\text{mole/g}$.

1 20. The process of claim 14, wherein the carrier
2 comprises an α -alumina having a BET surface area
3 of 0.1 m^2/g to 25 m^2/g , and an apparent porosity
4 of from 0.1 ml/g to 1.2 ml/g , measured by water
5 absorption.

1 21. The process of claim 14, wherein the carrier
2 comprises a silver bonded calcium carbonate
3 having a crush strength of at least 22 N.

1 22. The process of claim 14, wherein the carrier
2 comprises a silver bonded calcium carbonate

3 wherein the weight ratio of silver to calcium
4 carbonate is from 1:5 to 1:100.

1 23. The process of claim 14, wherein the carrier
2 comprises a silver bonded calcium carbonate
3 having a specific surface area of from 1 m²/g to
4 20 m²/g.

1 24. The process of claim 14, wherein the carrier
2 comprises a silver bonded calcium carbonate
3 having a specific surface area of from 3 m²/g to
4 15 m²/g.

1 25. The process of claim 14, wherein the carrier
2 comprises a silver bonded calcium carbonate
3 having an apparent porosity of from 0.05 ml/g to
4 2 ml/g.

5 26. The process of claim 14, wherein the carrier
6 comprises a silver bonded calcium carbonate
7 having an apparent porosity of from 0.1 ml/g to
8 1.5 ml/g.

9 27. The process of claim 14, wherein the carrier
10 comprises at least 95 %w α -alumina.

1 28. A method of making a 1,2-diol or a 1,2-diol
2 ether comprising converting an olefin oxide into
3 a 1,2-diol or 1,2-diol ether wherein the olefin
4 oxide has been obtained by a process comprising
5 reacting an olefin having at least 3 carbon atoms

6 with oxygen in the presence of a catalyst
7 composition comprising silver and an alkali metal
8 promoter deposited on a carrier, which alkali
9 metal promoter comprises potassium in a quantity
10 of at least 5 $\mu\text{mole/g}$, relative to the weight of
11 the catalyst composition, and an alkali metal
12 selected from the group consisting of lithium,
13 sodium and mixtures thereof in a quantity of at
14 least 1 $\mu\text{mole/g}$, relative to the weight of the
15 catalyst composition.